



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/720,812	11/24/2003	Jung S. Kang	42P17606	5364

7590 01/25/2008
Blakely, Sokoloff, Taylor & Zafman LLP
Suite 750
3200 Park Center Drive
Costa Mesa, CA 92626

EXAMINER

MITCHELL, JAMES M

ART UNIT	PAPER NUMBER
----------	--------------

2813.

MAIL DATE	DELIVERY MODE
-----------	---------------

01/25/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/720,812

Applicant(s)

KANG ET AL.

Examiner

James M. Mitchell

Art Unit

2813

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 October 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-48 is/are pending in the application.
- 4a) Of the above claim(s) 1-8 and 25-48 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. This office action is in response to applicant's amendment filed October 29, 2007.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 9, 12, 13 and 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Poddar et al. (U.S. 6,933,597).
4. Poddar (Fig. 1, 2) discloses:

(cl. 9) A spacer assembly comprising: a spacer (16) between upper (14) and lower dies (12) in stacked dies on a package substrate to provide clearance for bond wires (not labeled; Fig. 1) attaching to bond pads on the lower die (e.g. portion in contact with wire); a thin-film passive element integrated on the spacer (e.g. of a size being able to be formed within spacer and therefore a thin film; Abstract); and

conductors (12) attached to the passive element to connect the passive element to at least one of the upper and lower dies (Fig. 2);

(cl. 12) does not disclose that the passive element has a thickness substantially less than thickness of the spacer (e.g. of a size being able to be formed within spacer and therefore smaller than spacer; Abstract)

(cl. 13) the passive element has a multi-turn geometry ("inductors"; Abstract);

(cl. 15) bumps (22) attached to the passive element to electrically connect the passive element to at least one of the upper and lower dies (Fig. 2).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Poddar et al. (U.S. 6,933,597).

7. Poddar discloses the elements stated in paragraph 4 of this office action and further an inductance (e.g. inductor; Abstract), but does not explicitly disclose the inductor having an inductance of approximately between 1 nH to 10 nH.

8. However, the claimed range does not impart patentability since it has been held that where the general working conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233 (CCPA 1955).

9. Claims 9-14 and 16-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Poddar et al. (U.S. 6,933,597) in combination with Prietzsch (U.S. 2003/0015803).

10. Poddar discloses the elements stated in paragraph 4 of this office action, but does not explicitly disclose an upper adhesive layer to attach the spacer to the upper die, a lower adhesive layer to attach the spacer and the thin-film passive element to the lower die, the lower die attached to the package substrate by an adhesive between the lower die and the package substrate or a plurality of stacked dies.

11. However, Prietzsch teaches use of an upper adhesive layer (23) to attach the spacer (5) to the upper die (32), a lower adhesive layer (22) to attach the spacer to the lower die, the lower die attached to the package substrate by an adhesive (21) between the lower die and a plurality of stacked dies (Fig. 1).

12. It would have been obvious to one of ordinary skill in the art to modify the package of Poddar by incorporating use of adhesives as disclosed in Prietzsch and a plurality of stacked dies on the substrate of Poddar in order to provide an alternative connection means to bond the chip and spacer/passive components to adjacent material and high density as taught by Prietzsch (Title) and as contemplated by Poddar ("dies can be coupled together in whatever multiple is practical" & "connections...can be accomplished in any of several known manners..etc."; Col. 1, Lines 14-25 & Col. 2, Lines 4-7).

13. With respect the placement of the passive component in claims 18 and 19 being placed between the spacer and the lower adhesive layer. The modified package of

Poddar and Prietzsch discloses a passive component formed between its spacer (e.g. passive formed on) and adhesive that connects the passive and spacer, to a chip surface.

14. However, neither Poddar nor Prietzsch disclose the placement of its passive component being specifically on the lower surface of the spacer. Because the placement of the passive component would not produce unexpected results, behave in an unobvious manner or result in a modification of operation, the claimed limitation would have been obvious, since it has been that the mere shifting of parts is an obvious matter of design choice. See e.g. held In re Kuhle, 526 F.2d 553, 188 USPQ 7 (CCPA 1975) (particular placement of a contact in a conductivity measuring device was held to be an obvious matter of design choice); In re Japikse, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950) (Claims to a hydraulic power press which read on the prior art except with regard to the position of the starting switch were held unpatentable because shifting the position of the starting switch would not have modified the operation of the device.

15. With respect to the claimed range of inductance in claims 14 and 22, Poddar discloses an inductance (abstract), but does not explicitly disclose the inductor having an inductance of approximately between 1 nH to 10 nH.

16. However, see paragraph 8 of this office action.

Response to Arguments

17. Applicant's arguments with respect to amended claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art discloses in: Lee et al. (U.S. 7,023,096) and Fogal et al (U.S. 5,323,060) the use of a plurality of stacked dies with an intervening spacer between upper and lower dies; Yamashita (JP 4040628666) and Sundstrom (U.S. 5,864,177) the use of conductive adhesive to connect spacer to substrate; Stone (U.S. 5,530,288) thin film passive component in spacer.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M. Mitchell whose telephone number is (571) 272-1931. The examiner can normally be reached on M-F 8:00-4:00.

Application/Control Number:
10/720,812
Art Unit: 2813

Page 7

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ex. Mitchell
January 15, 2008



Carl Whitehead Jr.
SPE Art 2813

